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English Translation

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Description

Method and arrangement for optical information presentation

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The invention relates to a method for optical information presentation on a mobile radio terminal, or an accessory for a or such a GSM module, and to an arrangement for carrying out this method.

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In the developed industrial nations, mobile telephony has become one of the most dynamic mass markets in recent years and, in the process and virtually at the same time, has exposed development generally comparable 15 to the commercial development of the Internet. The establishment of digital mobile radio networks based on the GSM and PCN standards has thus started to create the preconditions for international and intercontinental mobile telephony, and the increasingly 20 faster extension of these systems means that they are rapidly approaching the aim of everyone being accessible anywhere and immediately by means of mobile telephony.

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Since, owing to the system requirements, modern mobile telephones have an extremely complex technical design and, furthermore, are not distinguished by being cheap appliances, the manufacturers are, firstly, always looking for opportunities to implement additional 30 useful features which are intended to persuade even people who have no requirement, or even no desire, to be accessible all the time everywhere to purchase a mobile telephone. Minor games features, which are intended to increase the attractiveness of mobile 35 telephones at times, have been found to be unsuitable for this purpose.

On the other hand, there is a large and growing market

for information services which are, in particular, even required while traveling and for which mobile telephones could thus be a suitable implementation means. Thus, fundamentally, mobile telephone

5 manufacturers and information providers have a common interest in finding solutions to further increase the usefulness of mobile telephones by means of additional services for those having such mobile telephones.

10 Methods for this are already known, which, to a certain extent, are also in use in practice - for example the cell broadcast method, which is already used by D2 Mannesmann in Germany. As is known, the GSM mobile radio standard allows the transmission of short

15 messages with a limited range of characters (SMS = Short Message Service), and services such as D2 MessagePlus, which have already been implemented, are based on this capability.

20 However, in practice, it has been found that the previous type of information transmission to mobile telephones and optical information presentation on their display areas cannot satisfy the increased expectations of users for an attractive information

25 display. Even while traveling, the user who has become used to attractive information displays from the standards set by printing media and television is prepared only to a restricted extent to put up with the small alphanumeric display areas of mobile telephones,

30 with their cumbersome text display. Calling up information, or even interactive processes, are also made considerably more difficult by the difficulties in using the keys on conventional mobile telephones. The critical fundamental disadvantage of mobile radio

35 services with providing additional information services which are as attractive as possible with currently known solutions is, however, the restricted available bandwidth.

The invention is thus based on the object of providing an improved method for optical information display on a mobile radio terminal (or an accessory) and of 5 providing a corresponding arrangement, by means of which a considerably more attractive and more informative information display can be provided, while observing the current limitations on the transmission bandwidth.

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With regard to its method aspect, this object is achieved by a method having the features of claim 1, and with regard to its arrangement aspect, it is achieved by an arrangement having the features of 15 claim 5.

Firstly, the invention includes the fundamental idea of providing a mixed graphics/text presentation using predetermined graphics or graphics modules in a way 20 that conserves bandwidth. It also includes the idea of storing a range of graphics or graphics elements at the terminal end, and of maintaining them such that they can be called up, allowing attractive information and commercial presentation without the graphics actually 25 needing to be transmitted via the air interface - that is to say with said bandwidth restriction. In fact, it is sufficient to call up the locally stored graphics by appropriate address and position codes in the terminal (or an accessory) and to display them on its display 30 area in the desired size and position, and to combine them with actually transmitted text sections of a message, in an informative and attractive manner.

It is self-evident that, even when using this method, a 35 normal mobile telephone of the present-day conventional type allows an information display whose attractiveness is only limited, due to the small size of the display area - although appliances are now already available

which offer considerably better preconditions in this context in that, for example, when unfolded, they offer a display area occupying virtually the entire appliance surface area and which, in some appliances, is also 5 already in the form of a touch screen and which, in other appliances, has an associated alphanumeric keypad which can be operated relatively well. One preferred embodiment of the proposed method is intended primarily for such appliances.

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An alternative embodiment is intended for implementation with an accessory, which has a sufficiently large display area and an associated keypad in the form of an organizer or handheld PC - or 15 has a corresponding touch screen.

Such an accessory has an interface which is suitable for linking to the mobile telephone, and can be connected to the mobile telephone via a cable, but 20 preferably via an infrared or radio transmission path.

Irrespective of whether such a range of graphics or graphics elements is stored in a mobile telephone itself or in an accessory for such a mobile telephone, 25 two different approaches are provided, in principle, for updating the range of graphics and the associated software. In a first embodiment, the graphics are stored in a data storage medium which is prefabricated and marketed separately from the terminal, and can thus 30 be replaced by an update directly, when updating is required. In another variant, which may be preferable, especially for commercial purposes, updating can be carried out by downloading from the Internet or some other IP network, so that all that need be provided in 35 the appliance is a read only memory with an appropriate capacity.

As envisaged at present, said additional service is

most expediently implemented with a predetermined number of channels which are each defined, and whose contents are each specified, by the network operator - who is at the same time the provider of the cell broadcast transmission technology. The network operator can then rent the channels prepared in this way to third parties who wish to have a range of information or a commercial message, or both, and (depending on the specific configuration of the system), the user can either use all the channels without any differentiation, or else a group of channels, or even only individual channels, with his terminal being prepared appropriately by storing ranges of graphics associated with selected channels.

In addition to the channels with specified contents, it is also possible additionally to provide channels via which the user is informed of the capability to update his terminal software, or receives other information from the network operator himself.

In addition, advantages and useful forms of the invention are described in the dependent claims and the following description of preferred exemplary embodiments with reference to the figures, in which:

Figure 1 shows an illustration, in the form of a sketch, of a system configuration according to a first embodiment of the invention,

Figure 2 shows an illustration, in the form of a sketch, of a system configuration according to a second embodiment of the invention,

Figure 3 shows an illustration of the display screen of the accessory according to Figure 1 in an initial phase of a call to an information service, and

Figures 4 to 8 show the display screen of the accessory when using different information services.

5 Figure 1 shows an information system 100 as an exemplary embodiment of the invention, in which a simple mobile telephone 110 with a single-line alphanumeric display 111 and a numerical keypad 112 is connected via two interface/transceiver units 121, 122, 10 which are described in GSM specifications 07.05 and 07.07, and an infrared path formed between them, to an accessory 130, which has a large matrix screen 131 and an alphanumeric keypad 132. One such accessory is, for example, an organizer modified for implementation of 15 the invention, which is referred to as a "databank" or a handheld PC. Instead of the keypad, an accessory such as this may also have a touch screen as the input device. The accessory 130 is designed to accommodate a memory card 133, in which the software required at the 20 terminal end to operate the information system is stored, in its respective latest form.

The mobile telephone 110 is connected in the normal way - which will thus not be explained any further here - 25 to a GSM mobile radio network 140, into which, via a suitable access device 150, an information service server 160 feeds a number of information services with differentiated contents, which are disseminated in the mobile radio network 140 via the channels CH1, CH2, ... 30 CHn. These channels are specified by the operator of the mobile radio network 140 and are available to the information service provider. The person using the mobile telephone 110 who wishes to use that information service can - depending on the specific system 35 configuration - access only selected channels, or else all the channels. In Figure 1, the symbolic inscription on the memory card 133 "CH1 CH2" indicates that the user has subscribed to only two selected channels and,

after insertion of the memory card 133 into his accessory 130, has available only the software required for these channels - in particular specific graphics and graphics elements, as well as associated addressing 5 and positioning software.

The information system 100 works in the way described in principle above, in that the information service provider provides schematically specified information 10 services, for example weather reports, traffic reports, travel information etc., via the server 160 in the channels CH1, CH2, ... CHn, and these are disseminated by the operator of the GSM network 140 as "content over the air". The person using the mobile telephone 110 and 15 the accessory 130 satisfies the terminal-end system preconditions for use of the desired information services by obtaining and inserting the ROM memory card 133. In principle, only text information as well as address and position data for calling up and for 20 positioning specific graphics and graphics elements stored in the ROM memory card 133 are transmitted via the server 160 and the mobile radio network 140 - matched to the narrow available bandwidth in the mobile radio network - to the display screen 131 of the 25 accessory 130. The accessory 130 is used to combine the transmitted data with the data stored on the ROM card 133 to produce an informative and attractive information display on the display screen 131.

30 Figure 2 shows a sketch of an information system 200 of somewhat different construction, in which a high-quality mobile telephone 210 with a multiline matrix display 211 and an alphanumeric keypad 212 is connected to a GSM mobile radio network, which is annotated here 35 by the reference number 220. An information service server 240 is once again connected to the GSM network 220 via a suitable access device 230, and is also connected via a modem 250 to an IP network 260 (for

example the Internet, but possibly also a commercial LAN). The IP network 260 is connected to the GSM mobile radio network 220 via a network interface 270 - which is known per se.

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In this case as well, the information service is offered in various channels CH1, CH2, ... CHn, and the person using the mobile telephone 200 can obtain the service globally or on a channel-specific basis.

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Firstly, updating information relating to the terminal software available for the individual information channels is disseminated, or new software is provided for downloading via the IP network 260, via two specific channels CHi and CHs, which each user of the information service obtains. The software which is implemented in the mobile telephone 210 itself in this embodiment is thus updated by downloading updates provided in the IP network 260 in this case, rather than by marketing/obtaining updates on ROM memory cards.

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Figures 3 to 8 use various display screen presentations to illustrate how the information system illustrated in the form of sketches in Figure 1 and 2 operates and is used.

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Figure 3 shows the accessory 130 from Figure 1 with a display screen presentation of various available information services, from which the user can make a selection. Figure 4 shows the display screen in the search mode using filters which can be specified by means of key words.

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Figure 5 shows the display screen while displaying a company-related or product-related information service, in this case information about a specific SMS (Short Message Service) feature. Figure 6 shows a display representation of TV program information on a program

provider, and Figure 7 shows how weather information is displayed by a program provider. Figure 8 shows the display of a horoscope, on which the formation of a predetermined icon, stored at the terminal end, of a logo header (which may be stored in the terminal or in the associated ROM memory card) and of a variable text can be seen particularly well, in each case transmitted at the time via the mobile radio network and being linked at the terminal end - in the accessory in the display shown in Figure 8 - by combination with the icon and logo to form an attractive overall display. This linking principle also forms the basis of the display screen images shown in Figures 5 to 8.

15 A message which is to be transmitted via the mobile radio network, by means of which a variable text is combined with an icon and a logo in the manner shown in Figure 9, may, for example, have the following composition: i020x10y101029x30y10text. This message 20 (which is, of course, transmitted using a coding defined in advance) would be interpreted at the terminal end such that the icon No. 020 (stored locally) is displayed with the x-coordinate of 10 pixels, and the logo No. 029 (likewise stored locally) 25 is displayed with the x-coordinate of 30 pixels and the y-coordinate of 10 pixels, together with a transmitted variable text, on the display screen.

30 The embodiment of the invention is not restricted to the examples explained briefly above, but is also feasible in a wide range of modified forms, which will be directly evident to a person skilled in the art.